Efficiency Vermont's Approach to Energy Resilience

Efficiency Vermont R&D Project: Energy Resilience

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Contents

Vermont's Need for Energy Resilience

The energy industry is undergoing a rapid increase in the use of renewable energy. Helping to drive this trend are federal funding opportunities such as American Rescue Plan Act (ARPA), the Infrastructure Investment and Jobs Act, and the Inflation Reduction Act (IRA) that have been designed to accelerate the transition to clean-energy use in the United States.

Efficiency Vermont supports customers and Vermont's energy system in this evolution through the delivery of energy efficiency and flexible load management programs, long-term resource planning, and emerging technology development. As customers electrify their thermal and transportation loads, their impact on grid stability (or instability) will increase. The increase will deepen their dependence on the grid for energy resilience. These energy conundrums contain another element: Increased severe weather events and reliance on intermittently available renewable energy for power generation present an ongoing, unpredictable risk to grid reliability.

Efficiency Vermont co-designs[1] **systems-optimized programs and services with its many partners.** Its subsequent implementation of these well-informed program designs mean that Vermont residents and businesses can understand and implement measures that bring energy resilience to their buildings—whether houses, multifamily buildings, storefronts, manufacturing facilities or large structures. Efficiency Vermont defines *energy resilience* as a condition under which customers have access to affordable, reliable, low-carbon energy—with the ongoing ability to prepare for, adapt to, and recover from power disruptions. This is accomplished by establishing energy assurance through one or more sources, to support critical loads that protect life and property in collaboration between multiple partners, including distribution utilities.

Short- and long-duration power outages can severely affect Efficiency Vermont customers and lead them to say "no" to the electrification of buildings. The negative effects of outages particularly disadvantage vulnerable residents, because they incur the highest cost if energy resilience is not in place. Vermont's distribution utilities (DUs) have made it a priority to manage these risks. And Efficiency Vermont supports the DUs in maintaining, lowering, and managing energy costs for Vermonters through its clean-energy work. This involves technical support, the statewide supply-partner network, and energy efficiency programs that can directly support the achievement of energy resilience.

Efficiency Vermont intentionally ensures that the benefits of energy resilience are distributed equitably across Vermont through the purposeful allocation of resources and opportunities to promote equitable outcomes across the state.

[1] *Co-designing* is Efficiency Vermont's strategy of working with partners, customers, and stakeholders affected by Efficiency Vermont's programs and services during the design process. Co-designing does not imply or require co-implementation by parties other than Efficiency Vermont.

Efficiency Vermont Supports Customer Energy Resilience

For this R&D project, Efficiency Vermont sought to define an appropriate role for supporting customers with the achievement of energy resilience. The research team has documented the allowances within VEIC's Order of Appointment for working on energy resilience, mapped Vermont's policies and regulations related to energy, and mapped Vermont's energy system from the perspective of customer energy resilience.

The research team identified a market gap in supporting customers with their comprehensive energy resilience planning. Such planning can involve weatherizing buildings, installing energy efficiency measures, determining critical load, flexible load management, energy storage, and back-up generation. The research concluded that **Efficiency Vermont is well positioned to complement and enhance what the DUs are already doing, and to provide customers with comprehensive support in identifying and following their total clean-energy journey for efficiency, electrification, decarbonization, and energy resilience. The R&D team proposes Efficiency Vermont's role in achieving energy resilience in Vermont encompasses:**

1. **Collaborating with the State, DUs, and Vermont Electric Power Company (VELCO) for long-range energy resilience planning**
2. **Using such planning to inform ways to achieve Efficiency Vermont's goals for delivering energy efficiency (including weatherization), flexible load management (FLM), and energy storage that support customer and grid energy resilience**
3. **Co-designing systems-optimized programs and services with DUs, customers, and other stakeholders to achieve customer energy resilience**
4. **Reinforcing the nexus of the "voice of the customer / community," their energy resilience timescale, greenhouse gas (GHG) reduction goals, and climate adaptation needs**
5. **Communicating the need for customer energy resilience and the quantifiable value of Efficiency Vermont's programs and services in contributing to such resilience**

Improving Customer Energy Resilience

From its research on customer energy resilience, the R&D team recommends Efficiency Vermont undertake the following projects:

Projects funded via the Resource Acquisition budget

1. **Energy resilience communications strategy: Cultivating a culture of energy resilience**

   Efficiency Vermont should review customer and partner information on energy resilience goals and stakeholder needs for meeting those goals. Efficiency Vermont should then publish a blog connecting its programs to desired energy resilience outcomes for customers. The blog can help determine foundational training for staff who directly work with customers. Well-informed staff can then support customer energy resilience planning and project implementation.

To achieve optimal outcomes on energy resilience, Efficiency Vermont should deliver clear and consistent messaging to complement the customer engagement. Clear messaging can also be directed to DU partners, which are also interested in advancing customer energy resilience to meet Tier III renewable energy targets. This messaging will emphasize weatherization, energy efficiency, and electrification in achieving energy resilience, and will normalize planning for critical loads, FLM, and storage.

2. Sustaining energy resilience by serving customers and DUs together

In the long term, the R&D team recommends Efficiency Vermont customer support staff and engineering consultants be trained on comprehensively supporting customers in evaluating the projects they undertake while on their total energy journey. Staff can help customers set energy resilience goals and create plans for achieving those goals. They can also collaborate with DUs and other industry stakeholders to promote resilience in targeted areas or sectors. They can support the most vulnerable customers and motivate customers to participate in Efficiency Vermont and corresponding DU programs.

Funding via the Research & Development budget

3. Customer energy resilience demonstration projects

Efficiency Vermont should co-design and launch two pilot projects targeting customer energy resilience. The projects will provide Efficiency Vermont staff with valuable experience in the dual benefits of motivating customer energy resilience and partnering on this topic with the DUs. The projects will also enable staff to identify the elements necessary for achieving energy resilience goals, determining which are the most promising, confusing, or negative for the customer. In this work, Efficiency Vermont can understand the costs and quantify the value of energy resilience for customers and DUs, and measure the outcomes of energy resilience projects in the context of Efficiency Vermont quantitative performance indicators (QPIs) and minimum performance requirements (MPRs).

Possible demonstration projects:

- Fully engaging a manufacturing customer with comprehensive energy resilience planning and implementation
- Responding to an "early adopter" residential customer on completing their energy transition to energy resilience
- Helping a multifamily property owner plan for energy resilience in its development(s)
- Testing and evaluating vehicle-to-building integration and controls

4. Measuring Impact: Quantifying the value of energy resilience

Efficiency Vermont should quantify the cost of having (or not having) energy resilience at the customer, grid node, and societal levels. This quantification would assess the benefits

and effects of Efficiency Vermont's role in accelerating energy resilience statewide. Efficiency Vermont should combine these customer and societal values with operational data and input from DUs and industry stakeholders. These factors would form the basis for a critical evaluation of Efficiency Vermont's energy resilience work and if appropriate, justify potential adjustments to Efficiency Vermont's screening and compensation structure. Such information would inform continued or expanded support from Efficiency Vermont for customers.

The results of this work, as well as the other two proposed projects, would support strategy development planning for the 2027-2029 Demand Resources Plan. It could include modifications to Efficiency Vermont's MPR 9 (Minimum Electric Benefits) and the FLM QPI. Efficiency Vermont could work with DUs and the Vermont Department of Public Service to align Efficiency Vermont's QPIs and MPRs with State goals for decarbonization and equity. This would improve coordination among energy resilience stakeholders. Gaining high-value experience with the DUs and the Department on energy resilience planning and implementation will provide insights for MPR and QPI updates.

Co-benefits of Energy Resilience

Customers and DU partners request help from Efficiency Vermont staff in planning for customer energy resilience. Staff want to respond to these requests but are currently constrained by a lack of experience and the permission to address comprehensive energy resilience planning. The research for this report suggests that it is time to revisit assumptions and agreements about Efficiency Vermont's optimal role on energy resilience, given the current state of Vermont's energy system, the energy system transformation timeline, and Efficiency Vermont's long-term goals.

The success of Green Mountain Power's battery programs shows that customers are willing to pay for energy resilience measures. The proposed Energy Resilience Outreach Strategy takes advantage of this customer interest to drive Efficiency Vermont programs and meet current performance goals. The R&D projects proposed in this report identify optimal strategies for achieving successful energy decarbonization. The Measuring Impact project (Recommendation 3) quantifies the value of Efficiency Vermont's ability to fulfill the role at the center of the energy transition at the customer level. The experiences from this R&D project and deepened relationships will position Efficiency Vermont well for helping to drive the industry toward more energy resilience, and the evaluation findings will defend Efficiency Vermont obtaining compensation for this work.

Vulnerable households and businesses run by those households suffer the most when the power goes out. As these households and businesses increase their reliance on electricity for thermal loads and transportation, the negative effects of a power outage add to that suffering. Supporting these community members in understanding, planning for, and implementing energy resilience aligns with Efficiency Vermont's DEI plan and goals.

The proposed Measuring Impact project will evaluate Efficiency Vermont's role in energy resilience delivery and quantify the value to Efficiency Vermont and Efficiency Vermont's customers and partners. Lessons learned from this work can be applied in the development and implementation of the Clean Heat Standard.

Next Steps

Efficiency Vermont will continue to develop project ideas for review and approval, including outreach to DUs.

Efficiency Vermont will identify opportunities to increase customer awareness of energy resilience and to co-design and implement the pilot projects proposed with DUs. Efficiency Vermont will also investigate valuing the benefits of energy resilience to contribute to a broader analysis of existing and potential metrics for energy efficiency programs.